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EXAMINER	
SHAH, CHIRAG G	

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2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/998,546	RAMAKRISHNAN ET AL.	
	Examiner	Art Unit	
	Chirag G. Shah	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15 and 23-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14 and 23-29* is/are rejected.

7)☒ Claim(s) *15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1'. Applicant's arguments filed 4/19/06 have been fully considered but they are not persuasive.

Applicant argues that Wu reference No. 2005/0041689 is generating statistics for only those framcs that are to be transcoded and does not teach or remotely suggest generating evaluation metrics for the entire stateremux. Examiner respectfully disagrees and redirects Applicant to specification page 22, lines 7-9 and Wu reference figure 1, paragraph 0077 and claim 1, since according to the specification page 22, lines 7-9, generating evaluation metrics simply provides a quantitative measure of the performance of the statremux into which it is integrated. Based on using the claims given the broadcst reasonable interpretation consistent with the specification, Examiner's interpretation of obtaining statistical information associated with the statistical remultiplexer 120 of fig. 1 as stated in the claim 1, lines 1-13 and abstract is respectfully indecd appropriated. Furthcrmore, generating evaluation metrics for the "cntire stateremux" was not originally claimed, which changes the scope of the claim and thus Applicant is providing argument against a referenced on the basis of currently amended claims.

Applicant further argues that the inventive evaluator generates one or more evaluation metrics that characterizes the performance of the stateremux as a whole. Applicant provides support of the amended "as a whole" by referring to figure 9 providing the description of the evaluator 932 utilizing information from an input bitstream before it enters the stateremux 906 and information from the output bitstream 930 aftcr it exits the statrcmux 906 to generate the

evaluation metrics 934. Based on the originally filed claims the Examiner's interpretation was respectfully appropriate since during patent examination, the claims are given the broadest reasonable interpretation consistent with the specification. See In re Morris, 127 F.3d 1048, 44 USPQ2d 1023 (Fed. Cir. 1997). See MPEP § 2111 - § 2116.01 for case law pertinent to claim analysis. However, based on Applicant's amendment requiring that the evaluator as recited in claim 1 quantitatively evaluates the performance of a statremux as a whole and not, as required by the Wu reference necessitates the new ground of rejection presented in this office action.

2. Applicant's amendment with respect to claims 1-9, 14-15, and 23-29 necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Claim Objection

3. Claim 14 objected to because of the following informalities: In claim 14, "comprsing" is misspelled. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-9, 14 and 26-29 rejected under 35 U.S.C. 103(a) as being unpatentable over Hurst (Pub. No.: US 2002/0067768) in view of Applicant Admitted Art (See Specification pages 8-9 and fig. 2&5).

Regarding claim 1, Hurst discloses of an apparatus **[control processor 26, fig. 1]** generating one or more evaluation metrics **[the control processor 26 compares particular input and output measurements 20 and 24 generated by measuring processes 18 and 22 based on the input and output bitstreams, respectively and generates one or more control paramcters, see paragraphs 0030-0031]** associated with the performance of a statistical remultiplexer **[the statistical information is associated with the processor 12 of fig. 1, see paragraphs 0030, 0031, and 0033]** the apparatus comprising:

a first input for receiving information related to an input bit stream to the statistical remultiplexer **[controller 26 receiving input measurement 20 of input bitstream sent to the processor 12, see fig. 1]**;

a second input for receiving information related to the output bit stream from the statistical remultiplexer **[controller 26 receiving input measurement 22 of output bitstream from processor 12, see fig. 1]**;

logic **[within the control process 26, see fig. 1 and paragraph 0031]** for generating the one or more evaluation metrics **[generating one or more control parameter, see 0031]** using the received information from both the input and the output bit streams that provides a quantitative measure of the performance of the statistical remultiplexer **[as disclosed in paragraph 0031 and see fig. 1, where the input and output measurements are compared by the control process 26, which generates one or more control parameters (evaluation metric) that are used to adjust process 12 (serving as remultiplexer)]**; and

at least one output for outputting the one or more evaluation metrics of the statistical remultiplexer **[see fig. 1 and paragraph 0031, where the control process 26, outputs the generated one more control parameters 28 of the process 12 that are used to adjust process 12 (serving as remultiplexer) so that subsequent output measurement(s) will more closely match subsequent input measurement(s)]**.

Hurst discloses in figure 1 and paragraph 0031 of the process 12 receiving compressed input bitstream to generate differing quantitatively compressed output bitstream. Hurst discloses that the process 12 in fig. 1, 0033, 0045 and 0058 includes a reencoder 210 (see fig. 2 and 0045) for recncoding the input compressed bitstream encoded MPEG-2 video data. *Hurst, however fails to explicitly disclose the process 12 may be a statistical remultiplexer.*

Similar to the process 12 of Hurst, according to the Applicant Admitted Art in the Specification page 5, lines 17-30 and figure 2 of the specification disclose, the statistical remultiplexer (statremux) architecture 200, which accepts compressed digital bit streams such as MPEG-2 consisting of multiple video/audio/data programs from encoder. Furthermore, it is further disclose on page 9, 1st paragraph that some statistical remultiplexers rely on information

solely contained in the pre-compressed bit steams for re-encoding. Thus clearly based similarities in its architecture, the statistical remultiplexer may replace the process 12, fig. 1 of Hurst reference.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of the Hurst to replace process 12 with a similar architecture of a statistical remultiplexer as taught by the Applicant admitted art. One is motivated as such in order quantitatively measure the input compressed bit streams and output compressed bit achieving a measurement of quality and delay.

Regarding claim 2, wherein the evaluation metric is selected from a group comprising: an amount of bit rate reduction, change in video quality, wasted output bandwidth, decoder buffer model data level, bit rate reduction characteristics, and time delay **[Hurst disclose in the combination of paragraphs 0010-0012 and 0030-0032, wherein control process 26 of fig. 1 generates one or more control parameters (evaluation metric) adjusted/selected based on the difference in bit rate between the measured input and output bit stream]**.

Regarding claim 3, Hurst discloses in paragraph 0173 the present invention of figure 1 that includes process 12 and control process 26 may be implemented on a single integrated solution clearly suggesting that wherein the apparatus (control process 26 of fig. 1) may be integrated into a statistical remultiplexer (process 12). *Hurst, however fails to explicitly disclose the process 12 may be a statistical remultiplexer.*

Similar to the process 12 of Hurst, according to the Applicant Admitted Art in the Specification page 5, lines 17-30 and figure 2 of the specification disclose, the statistical remultiplexer (statremux) architecture 200, which accepts compressed digital bit streams such as MPEG-2 consisting of multiple video/audio/data programs from encoder. Furthermore, it is further disclose on page 9, 1st paragraph that some statistical remultiplexers rely on information solely contained in the pre-compressed bit steams for re-encoding. Thus clearly based similarities in its architecture, the statistical remultiplexer may replace the process 12, fig. 1 of Hurst reference.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of the Hurst to replace process 12 with a similar architecture of a statistical remultiplexer as taught by the Applicant admitted art. One is motivated as such in order quantitatively measure the input compressed bit streams and output compressed bit achieving a measurement of quality and delay.

Regarding claim 4, Hurst discloses wherein the apparatus [control process 26, see fig. 1] is separate from and connectable to a statistical remultiplexer [process 12, see fig. 1]. *Hurst, however fails to explicitly disclose the process 12 may be a statistical remultiplexer.*

Similar to the process 12 of Hurst, according to the Applicant Admitted Art in the Specification page 5, lines 17-30 and figure 2 of the specification disclose, the statistical remultiplexer (statremux) architecture 200, which accepts compressed digital bit streams such as MPEG-2 consisting of multiple video/audio/data programs from encoder. Furthermore, it is further disclose on page 9, 1st paragraph that some statistical remultiplexers rely on information

solely contained in the pre-compressed bit steams for re-encoding. Thus clearly based similarities in its architecture, the statistical remultiplexer may replace the process 12, fig. 1 of Hurst reference.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of the Hurst to replace process 12 with a similar architecture of a statistical remultiplexer as taught by the Applicant admitted art. One is motivated as such in order quantitatively measure the input compressed bit streams and output compressed bit achieving a measurement of quality and delay.

Regarding claim 5, Hurst discloses of a method including an apparatus **[control processor 26, fig. 1]** for generating one or more evaluation metrics **[the control processor 26 compares particular input and output measurements 20 and 24 generated by measuring processes 18 and 22 based on the input and output bitstreams, respectively and generates one or more control parameters, see paragraphs 0030-0031]** associated with the performance of a statistical remultiplexer as a whole **[the statistical information is associated with the processor 12 of fig. 1, see paragraphs 0030, 0031, and 0033]** the method comprising:

receiving information related to an input bit stream to the statistical remultiplexer **[controller 26 receiving input measurement 20 of input bitstream sent to the processor 12, see fig. 1]**;

receiving information related to an output bit stream from the statistical remultiplexer **[controller 26 receiving input measurement 22 of output bitstream from processor 12, see fig. 1]**; and

generating an evaluation metric utilizing the information received from the input bit stream(s) and the output bit stream that provides a quantitative measure of the performance of the statistical remultiplexer as a whole **[as disclosed in paragraph 0031 and see fig. 1, where the input and output measurements are compared by the control process 26, which generates one or more control parameters (evaluation metric) that are used to adjust process 12 (serving as remultiplexer)]**.

Hurst discloses in figure 1 and paragraph 0031 of the process 12 receiving compressed input bitstream to generate differing quantitatively compressed output bitstream. Hurst discloses that the process 12 in fig. 1, 0033, 0045 and 0058 includes a reencoder 210 (see fig. 2 and 0045) for reencoding the input compressed bitstream encoded MPEG-2 video data. *Hurst, however fails to explicitly disclose the process 12 may be a statistical remultiplexer.*

Similar to the process 12 of Hurst, according to the Applicant Admitted Art in the Specification page 5, lines 17-30 and figure 2 of the specification disclose, the statistical remultiplexer (statremux) architecture 200, which accepts compressed digital bit streams such as MPEG-2 consisting of multiple video/audio/data programs from encoder. Furthermore, it is further disclose on page 9, 1st paragraph that some statistical remultiplexers rely on information solely contained in the pre-compressed bit steams for re-encoding. Thus clearly based similarities in its architecture, the statistical remultiplexer may replace the process 12, fig. 1 of Hurst reference.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of the Hurst to replace process 12 with a similar architecture of a statistical remultiplexer as taught by the Applicant admitted art. One is

motivated as such in order quantitatively measure the input compressed bit streams and output compressed bit achieving a measurement of quality and delay.

Regarding claim 6, Hurst discloses wherein receiving information related to an input bit stream **(input bitstream 14, see fig. 1 and 0031)** comprises determining an input bit rate **(see paragraph 0030-0031)** of the input bit stream receiving information related to an output bit stream comprises determining an output bit rate **(see output bit stream 16, see fig. 1 and paragraphs 0031)** of the output bit stream, and generating an evaluation metric **(control parameters, see 0031)** comprises determining the amount of bit rate reduction **(difference in bit rate)** performed by the statistical remultiplexer as a whole **[Hurst that the control process 26 generates one or more control parameters (evaluation metric) having the difference in bit rate based on the comparison of the measurement of the input bits stream and the output bit stream of the process 12 (serving as the statistical remultiplexer) with respect to bitstream bit rate, see paragraphs 0030-0031].** *Hurst, however fails to explicitly disclose the process 12 may be a statistical remultiplexer.*

Similar to the process 12 of Hurst, according to the Applicant Admitted Art in the Specification page 5, lines 17-30 and figure 2 of the specification disclose, the statistical remultiplexer (statremux) architecture 200, which accepts compressed digital bit streams such as MPEG-2 consisting of multiple video/audio/data programs from encoder. Furthermore, it is further disclose on page 9, 1st paragraph that some statistical remultiplexers rely on information solely contained in the pre-compressed bit steams for re-encoding. Thus clearly based

similarities in its architecture, the statistical remultiplexer may replace the process 12, fig. 1 of Hurst reference.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of the Hurst to replace process 12 with a similar architecture of a statistical remultiplexer as taught by the Applicant admitted art. One is motivated as such in order quantitatively measure the input compressed bit streams and output compressed bit achieving a measurement of quality and delay.

Regarding claim 7, Hurst discloses in paragraph 0034 and 0045 of compressed input/output MPEG-2 bitstream bit rate. Hurst explicitly does not mention that the bit rates of the compressed MPEG-2 input and output data bitstreams include filler packet, clearly suggesting that the input/output compressed bit rate does not include a bit rate attributable to filler packets.

Regarding claim 8, **Hurst disclose in the combination of paragraphs 0010-0012 and 0030-0032, wherein control process 26 of fig. 1 generates one or more control parameters (evaluation metric) adjusted/selected based on the difference in bit rate between the measured input and output bit stream. Hurst establishes based on comparison of the input and output bit steam rates the difference including reduction in bit rate, since the initial input bit rate is measured and the output bit rated is measured, see paragraphs 0031-0032.** Hurst does not specifically state wherein the amount of bit rate reduction is a percentage of bit rate reduction. It is inherent knowledge with respect to the percentage of bit rate reduction or

difference having known the difference between input bit rate and output bit rate values based on measurement of the respective input/output values as in fig. 1 and paragraph 0031-0032.

Regarding claim 9, Hurst discloses wherein the evaluation metric **(control process 26 generates one or more control parameters, see paragraph 0031)** is generated by an evaluator (control **processor 26, see fig. 1 and paragraphs 0030-0031)** as claim.

Regarding claim 14, wherein the evaluation metric is selected from a group comprising: an amount of bit rate reduction performed, number of frames subjected to bit rate reduction, number of bits reduced per frame, change in video quality, wasted output bandwidth, decoder buffer model data level, bit rate reduction characteristics, and time **[Hurst disclose in the combination of paragraphs 0010-0012 and 0030-0032, wherein control process 26 of fig. 1 generates one or more control parameters (evaluation metric) adjusted/selected based on the difference in bit rate between the measured input and output bit stream]**.

Regarding claim 26, Hurst discloses of a device **[control processor 26, fig. 1]** generating one or more evaluation metrics **[the control processor 26 compares particular input and output measurements 20 and 24 generated by measuring processes 18 and 22 based on the input and output bitstreams, respectively and generates one or more control parameters, see paragraphs 0030-0031]** associated with the performance of a statistical remultiplexer **[the statistical information is associated with the processor 12 of fig. 1, see paragraphs 0030, 0031, and 0033]** the device comprising:

means **[controller 26 having input, see fig. 1]** for receiving information related to an input bit stream to the statistical remultiplexer **[controller 26 receiving input measurement 20 of input bitstream sent to the processor 12, see fig. 1]**;

means **[controller 26 having a second input, see fig. 1]** for receiving information related to the output bit stream from the statistical remultiplexer **[controller 26 receiving input measurement 22 of output bitstream from processor 12, see fig. 1]**;

means **[logic within the control process 26, see fig. 1 and paragraph 0031]** for generating one or more evaluation metrics the received information from both the input and the output bit streams that provides a quantitative measure of the performance of the statistical remultiplexer as a whole logic **[as disclosed in paragraph 0031 and see fig. 1, where the input and output measurements are compared by the control process 26, which generates one or more control parameters (evaluation metric) that are used to adjust process 12 (serving as remultiplexer)]**; and

means **[controller 26 having output, see fig. 1]** for outputting the one or more evaluation metrics of the statistical remultiplexer **[see fig. 1 and paragraph 0031, where the control process 26, outputs the generated one more control parameters 28 of the process 12 that are used to adjust process 12 (serving as remultiplexer) so that subsequent output measurement(s) will more closely match subsequent input measurement(s)]**.

Hurst discloses in figure 1 and paragraph 0031 of the process 12 receiving compressed input bitstream to generate differing quantitatively compressed output bitstream. Hurst discloses that the process 12 in fig. 1, 0033, 0045 and 0058 includes a reencoder 210 (see fig. 2 and 0045)

for reencoding the input compressed bitstream encoded MPEG-2 video data. *Hurst, however fails to explicitly disclose the process 12 may be a statistical remultiplexer.*

Similar to the process 12 of Hurst, according to the Applicant Admitted Art in the Specification page 5, lines 17-30 and figure 2 of the specification disclose, the statistical remultiplexer (statremux) architecture 200, which accepts compressed digital bit streams such as MPEG-2 consisting of multiple video/audio/data programs from encoder. Furthermore, it is further disclose on page 9, 1st paragraph that some statistical remultiplexers rely on information solely contained in the pre-compressed bit steams for re-encoding. Thus clearly based similarities in its architecture, the statistical remultiplexer may replace the process 12, fig. 1 of Hurst reference.

Regarding claim 27, wherein the evaluation metric is selected from a group comprising: an amount of bit rate reduction performed by the statistical remultiplexer, a change in video quality attributable to the statistical remultiplexer, wasted output bandwidth by the statistical remultiplexer, decoder buffer level fullness, bit rate reduction characteristics of the statistical remultiplexer, and time delay attributable to the statistical remultiplexer **[Hurst disclose in the combination of paragraphs 0010-0012 and 0030-0032, wherein control process 26 of fig. 1 generates one or more control parameters (evaluation metric) adjusted/selected based on the difference in bit rate between the measured input and output bit stream]**.

Regarding claim 28, Hurst discloses of a computer readable medium containing an executable computer program **[control process 26 of figure 1 includes a processor that is evident in the art, which must include a RAM for storing program, see fig. 1 and 0173-0174**; ***Note: the present invention may be implemented a circuit based processes, including possible implementation on a signal integrated circuit. Furthermore, various function implemented as processing steps may be implemented as processing steps in a software program. Furthermore, the present invention may be embodied in the form of program code embodied in tangible media such as any other machine readable storage medium, wherein, when the program code is loaded into the executed by a machine such as a computer, see 0173-0174***] for generating one or more evaluation metrics associated with the performance of a statistical remultiplexer as a whole **[the control processor 26 compares particular input and output measurements 20 and 24 generated by measuring processes 18 and 22 based on the input and output bitstreams, respectively and generates one or more control parameters, see paragraphs 0030-0031]**, the method comprising:

computer code **(software code stored in the control process 26, see fig. 1 and paragraphs 0173-0174)** for receiving information from an input bit stream to the statistical remultiplexer **[controller 26 receiving input measurement 20 of input bitstream sent to the processor 12, see fig. 1]**;

computer code **(software code stored in the control process 26, see fig. 1 and paragraphs 0173-0174)** for receiving information from the output bit stream from the statistical remultiplexer **[controller 26 receiving input measurement 22 of output bitstream from processor 12, see fig. 1]**;

computer code **(software code stored in the control process 26, see fig. 1 and paragraphs 0173-0174)** for generating an evaluation metric utilizing the information received from the input bit stream and the output bit stream that provides a quantitative measure of the performance of the statistical remultiplexer as a whole **[as disclosed in paragraph 0031 and see fig. 1, where the input and output measurements are compared by the control process 26, which generates one or more control parameters (evaluation metric) that are used to adjust process 12 (serving as remultiplexer)]**;

computer readable medium for storing the computer code **the present invention may be embodied in the form of program code embodied in tangible media such as any other machine readable storage medium, wherein, when the program code is loaded into the executed by a machine such as a computer, see 0173-0174, see fig. 1 and 0173-0174]**; and

a computer code **(software code stored in the control process 26, see fig. 1 and paragraphs 0173-0174)** for outputting the one or more evaluation metrics remultiplexer **[see fig. 1 and paragraph 0031, where the control process 26, outputs the generated one more control parameters 28 of the process 12 that are used to adjust process 12 (serving as remultiplexer) so that subsequent output measurement(s) will more closely match subsequent input measurement(s)]**:

Hurst discloses in figure 1 and paragraph 0031 of the process 12 receiving compressed input bitstream to generate differing quantitatively compressed output bitstream. Hurst discloses that the process 12 in fig. 1, 0033, 0045 and 0058 includes a reencoder 210 (see fig. 2 and 0045) for reencoding the input compressed bitstream encoded MPEG-2 video data. *Hurst, however fails to explicitly disclose the process 12 may be a statistical remultiplexer.*

Similar to the process 12 of Hurst, according to the Applicant Admitted Art in the Specification page 5, lines 17-30 and figure 2 of the specification disclose, the statistical remultiplexer (statremux) architecture 200, which accepts compressed digital bit streams such as MPEG-2 consisting of multiple video/audio/data programs from encoder. Furthermore, it is further disclose on page 9, 1st paragraph that some statistical remultiplexers rely on information solely contained in the pre-compressed bit steams for re-encoding. Thus clearly based similarities in its architecture, the statistical remultiplexer may replace the process 12, fig. 1 of Hurst reference.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of the Hurst to replace process 12 with a similar architecture of a statistical remultiplexer as taught by the Applicant admitted art. One is motivated as such in order quantitatively measure the input compressed bit streams and output compressed bit achieving a measurement of quality and delay.

Regarding claim 29, wherein the evaluation metric is selected from a group comprising: an amount of bit rate reduction performed by the statistical remultiplexer, a change in video quality attributable to the statistical remultiplexer, wasted output bandwidth by the statistical remultiplexer, decoder buffer level fullness, bit rate reduction characteristics of the statistical remultiplexer, and time delay attributable to the statistical remultiplexer **[Hurst disclose in the combination of paragraphs 0010-0012 and 0030-0032, wherein control process 26 of fig. 1 generates one or more control parameters (evaluation metric) adjusted/selected based on the difference in bit rate between the measured input and output bit stream]**.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 10-11 rejected under 35 U.S.C. 103(a) as being unpatentable over Hurst in view of Applicant Admitted Art and further in view of Lin et al. (U.S. Pub. 2003/0081676 A1), hereinafter Lin.

Regarding claim 10, Hurst discloses 0009-0012 and 0030-0031 wherein receiving information related to an input bit stream (compress input video bit stream) comprises determining input video quality of the input bit stream (controller compares the measurement of input/output bit streams to determine the input bit stream video quality, see 0009-0012 and 0031), receiving output information related to an output bit stream comprises determining output video quality of the output bit stream (controller compares the measurement of input/output bit streams to determine the output bitstream video quality, see 0009-0012 and 0031)).

Hurst in view of Applicant Admitted Art fails to explicitly disclose wherein generating an evaluation metric comprises determining a difference in video quality between the input video quality and the output video quality. Lin discloses in claim 1 and paragraph 0022-0023, Fig. 8A and 8B of a video transcoding (remultiplexing). The input unit receives a video bit-stream encoded by motion compensation based on the frame. The DCT-domain motion compensation unit re-calculates first DCT coefficients for a target block in the inter-frame included in the video

bit-stream received, and an output unit is configured to transmit transcoded video bit-stream, where the motion compensation ealculates the differenee in video quality of the input pixel bloek and output target video quality. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teaehings of Hurst in view of Applicant Admitted Art to generate an evaluation metrie for enabling a difference in video quality between the input and the output video quality as taught by Lin. One is motivated as sueh in order to provide a difference and prediction error between ineoming image and outgoing image for producing exactly the same reeonstrueted pieture as those in the front eneoder to ensure QoS.

Regarding claim 11, Hurst in view of Applicant Admitted Art fails to disclose wherein the differenee in video quality is based upon pixel measurements. Lin discloses in figures 2 and 3 of a pixel-domain transcoder and discloses of transcoder 200 (remultiplexer) reencodes video into desirable bit-rate wherein the difference in video quality is based upon pixel measurements. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teaehings of Hurst in view of Applieant Admitted Art to generate an evaluation metric for enabling a difference in video quality between the input and the output video quality based on pixel measurements as taught by Lin. One is motivated as sueh in order to provide a differenee in pixels and predietion error between incoming image and outgoing image for producing exaetly the same reeonstrueted pieture as those in the front eneoder to ensure QoS.

7. Claims 12-13 rejected under 35 U.S.C. 103(a) as being unpatentable over Hurst and Applicant Admitted Art in view of Lin et al. (U.S. Pub. 2003/0081676 A1), hereinafter Lin and further in view of Miyaji et al (6,239,834), hereinafter Miyaji.

Regarding claim 12, Hurst and Applicant Admitted Art further in view of Lin fails to disclose wherein the video quality is a means square difference. Miyaji teaches in the col. 10, lines 1-45, col. 1, lines 28-38 and in figure 6 of an apparatus for evaluating digital picture quality, including a SNR calculation module for calculating a means square error difference and SNR (Signal-to-Noise ratio) based on differences between data of video picture and original video picture. Thus, SNR calculator calculates a SNR, namely the sum of differences between the original video data values and reconstructed video data values and output the difference with respect to video quality between two signals as claims. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of Hurst and Applicant Admitted art in view of Lin to include the feature of calculating the mean square error difference in the difference in video quality as taught by Miaji. One is motivated as such in order to precisely measure video quality and noise results and its differences to ensure QoS.

Regarding claim 13, Hurst and Applicant Admitted Art further in view of Lin fails to disclose wherein difference in video quality is based on Signal to noise ratio. Miyaji teaches in the abstract, col. 10, lines 1-45 and in figure 6 of an apparatus for evaluating digital picture quality, including a SNR calculation module for calculating a SNR (Signal-to-Noise ratio) based on differences between data of video picture and original video picture. Thus, SNR provides a difference between a signal to noise ratio with respect to video quality between two signals as

claims. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of Hurst and Applicant Admitted art in view of Lin to include the feature of difference in video quality being based on SNR as taught by Miaji. One is motivated as such in order to precisely measure video quality and noise results and its differences to ensure QoS.

Allowable Subject Matter

Claim 15 would be allowable if rewritten or amended to overcome the objection, set forth in this Office action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chirag G. Shah whose telephone number is 571-272-3144. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on 571-272-7682. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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cgs
June 8, 2006

Chirag Shah
Patent Examiner, Division 2616